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Cooperative Economic Insect Report

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PLANT PROTECTION AND QUARANTINE PROGRAMS
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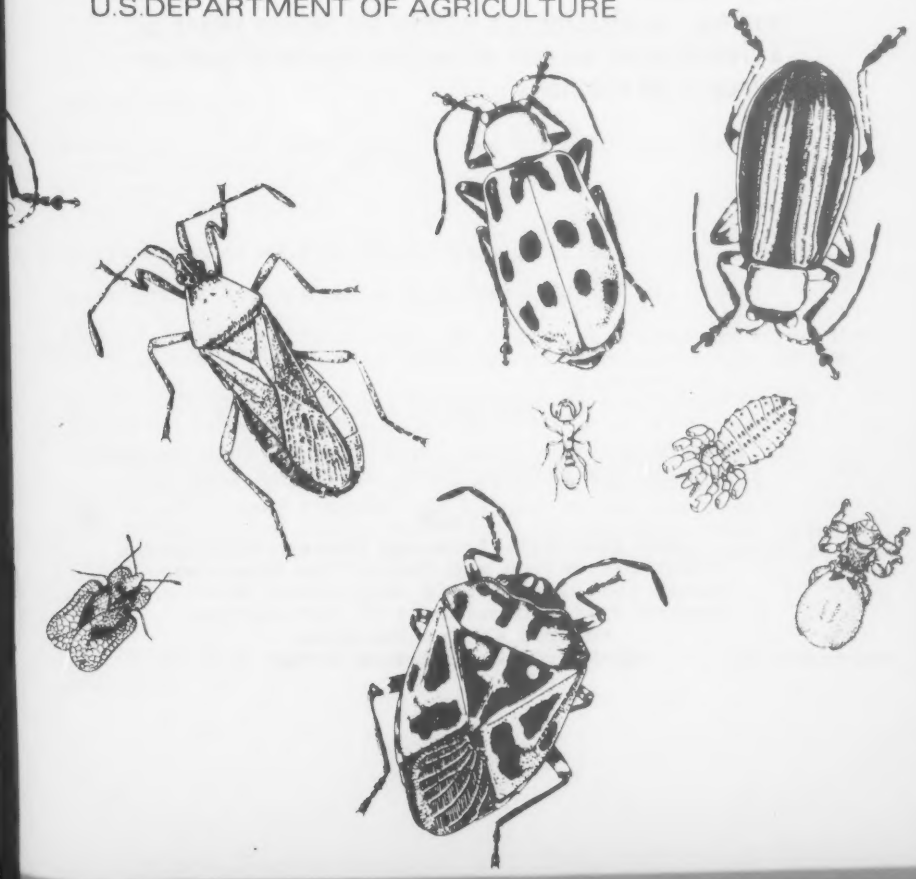

ANIMAL AND PLANT HEALTH INSPECTION SERVICE
PLANT PROTECTION AND QUARANTINE PROGRAMS
NEW PEST DETECTION AND SURVEY STAFF

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Service serves as a clearing house and does not assume responsibility for accuracy of the material.

All reports and inquiries pertaining to this release, including the mailing list, should be sent to:

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Volume 25 March 14, 1975 Number 11

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

GREENBUG at threatening and severe levels in small grains in areas of Texas and Oklahoma. Predators and parasitic wasps active in Texas. (p. 171).

No SCREWWORM cases reported in continental U.S. during period February 23 to March 1. (p. 173).

Detection

Two LONGHORNED BEETLES reported for first time in Nevada. (p. 172).

For new county and island records see page 175.

Some First Appearances of the Season

ALFALFA WEEVIL egg hatch in Oklahoma. SPOTTED CUCUMBER BEETLE adults in Mississippi. BOLL WEEVIL adults in Alabama. SPRING CANKERWORM moths in Kansas. HORN FLY adults in Oklahoma. STABLE FLY adults in Mississippi. EASTERN SUBTERRANEAN TERMITE swarming in North Carolina.

Special Reports

Summary of Insect Conditions in the United States - 1974
Forage Legumes (pp. 176-188).
Soybeans (pp. 188-191).
Peanuts (pp. 191-192).

Distribution of Alfalfa Weevil (map). (p. 179).

Distribution of European Alfalfa Beetle (map). (p. 184).

Vespula germanica (Fabricius), An Adventive Yellow Jacket in the Northeastern United States (Hymenoptera: Vespidae). (pp. 193-200).

Notes on Chionaspis and Pseudaulacaspis in the United States (Homoptera: Diaspididae). (pp. 201-203).

As the result of the reorganization of Plant Protection and Quarantine Programs, the function of the Cooperative Economic Insect Report was assumed by the New Pest Detection and Survey Staff effective March 2, 1975. This change is reflected on the inside of the front cover of this issue.

Reports in this issue are for week ending March 7 unless otherwise indicated.

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WEATHER OF THE WEEK ENDING MARCH 10

Reprinted from Weekly Weather and Crop Bulletin supplied by National Weather Service, NOAA.

HIGHLIGHTS: A large stationary Low off the west coast triggered heavy rains during the week in California with lighter amounts spilling inland across Nevada and Arizona. Temperatures for the week averaged below normal from the eastern slopes of the Rockies to the Atlantic. Coolest areas included the North Central States, where eastern Iowa was as much as 12 degrees below normal and the Southeastern United States where temperatures ranged downward to 10 degrees below normal.

PRECIPITATION: Monday, strong circulation from a departing storm system whipped up snow showers over and south of the Great Lakes and western New England. Bradford, Pennsylvania, was shrouded with snow and blowing snow reducing visibilities to less than 1 mile. Meanwhile, Syracuse and Rochester, New York, added one inch of new snow early in the evening. Snow showers continued south of the Great Lakes, while a front in the Gulf of Mexico caused rain and rain showers along the southern coast on Tuesday. New Orleans, Louisiana, and Biloxi, Mississippi, received over 1 inch of rain during the day. A Low center forming in south-central Canada produced some snow showers across the central border States. Wednesday, the Canadian Low moved into Minnesota with the frontal system trailing south-southwestward into Kansas. Early in the day, spotty precipitation occurred from Montana and northern Wyoming

Weather of the week continued on page 204.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

BEET LEAFHOPPER (Circulifer tenellus) - CALIFORNIA - Treatments scheduled to begin March 4. High winds week ending February 28 caused slight reduction in leafhopper population and in acreage sprayable in Imperial County. About 16,000 acres need treatment. Nymphs beginning to appear in Big and Little Panoche Canyons. Up to 3 per 100 sweeps found. To date, overwintering females, spring adults, and nymphs found on breeding slopes. This will cause overlapping of nymphal hatch and development, and complicate control measures. Annuals green and favorable. Heavy concentrations of overwintering leafhopper adults found in Maricopa area, Kern County. Females checked contained up to 12 eggs. Annuals on flats favorable and leafhoppers not moving to slopes with vegetation. It is unusual that no nymphs were found. (Cal. Coop. Rpt.).

GREENBUG (Schizaphis graminum) - TEXAS - Ranged 5-99 per drill row foot in small grain fields in Archer, Dickens, Fisher, Jones, Stonewall, Throckmorton, and Young Counties. Ranged 100-300 per row foot in Baylor, Foard, Hardeman, Haskell, Knox, Wichita, and Wilbarger Counties. Ranged 50-600 per row foot in Plainview area of Hale County. Heavy populations of parasitized greenbugs noted in several Hardeman County fields, ranged 27-52 per drill row foot. Parasitic wasp activity also noted in several fields in Archer and Baylor Counties, up to 10 greenbugs parasitized per row foot. Light populations of lady beetles, nabids, spiders, lacewing larvae, and syrphid fly larvae reported preying on greenbugs in several fields in Archer, Baylor, Haskell, Wilbarger, and Hale Counties. (Boring, Latham).

OKLAHOMA - Greenbug counts per linear foot in wheat by county ranged as follows: Texas 0-150, Jackson 40-225, Kiowa 20-80, Jefferson 0-30. (Okla. Coop. Sur.). KENTUCKY - Collected on winter wheat in Todd and Daviess Counties February 12, 1975, by D.E. Barnett and H. Raney. Tentatively determined by H. Raney and confirmed by D.E. Barnett. These are new county records. (Barnett, Gregory).

SPOTTED ALFALFA APHID (Therioaphis maculata) - NEW MEXICO - Ranged 1-4 per square foot on young alfalfa near Carlsbad and Artesia, Eddy County. (N.M. Coop. Rpt.).

SMALL GRAINS

WINTER GRAIN MITE (Penthaleus major) - TEXAS - Light, ranged 1-15 per drill row foot, in small grain fields in Archer, Baylor, and Throckmorton Counties. Light infestations, 60 per row foot, also reported from two Foard County fields. (Boring). OKLAHOMA - Ranged 15-30 per linear foot in Jefferson County wheat. Only light populations found in several southwest counties checked. (Okla. Coop. Sur.).

AN APHID (Rhopalosiphum padi) - TEXAS - Light, ranged 1-10 per row foot, in small grain fields in Archer, Baylor, Haskell, Knox, Throckmorton, and Wichita Counties. Infestations ranged up to 100 per row foot in Hale County. (Boring, Latham). OKLAHOMA - Ranged 10-60 per linear foot in Jackson County wheat and 10-30 per linear foot in Greer, Kiowa, and Harmon Counties. (Okla. Coop. Sur.).

FORAGE LEGUMES

ALFALFA WEEVIL (Hypera postica) - TEXAS - Heavy infestations noted in south-central area alfalfa. (Cole). OKLAHOMA - Damaged terminals ranged up to 80 percent in Greer County (larvae ranged 1-2 per terminal) and 5-25 percent in Kiowa and Jackson Counties. Hatching reported in Beaver County. (Okla. Coop. Sur.). KANSAS - Larvae, first and second instars, averaged 0.5 per 2-inch green stem in one Cherokee County alfalfa field. Infested stems noted at 24-percent level. (Bell). ARKANSAS - Survey negative in northwest and southwest area alfalfa. (Boyer). KENTUCKY - Eggs averaged 31.5, 28.6, and 24.4 per square foot in alfalfa at various Fayette County locations and 154 per square foot at one Barren County location. (Barnett, Parr).

SPOTTED CUCUMBER BEETLE (Diabrotica undecimpunctata howardi) - MISSISSIPPI - Some beetles active in legumes on warm days in Oktibbeha County. (Robinson).

PEA APHID (Acyrthosiphon pisum) - NEW MEXICO - Ranged 4-6 per square foot on seedling alfalfa near Carlsbad and Artesia, Eddy County. (N.M. Coop. Rpt.). ARKANSAS - Survey negative in alfalfa and vetch on farm in Washington County. (Boyer).

COTTON

BOLL WEEVIL (Anthonomus grandis) - ALABAMA - Total of 396 weevils caught in Leggett traps in Barbour County during February. This compares with 63 during same period in 1973. None caught in 1974 as cotton not planted in area in 1973. (Davis).

ORNAMENTALS

BAGWORM (Thyridopteryx ephemeraeformis) - ALABAMA - Several cedar trees in Chulafinnee Community, Cleburne County, contained 1,000+ overwintering bags per tree with viable eggs. Eggs not yet hatched. (Barham, Dulaney).

LONGHORNED BEETLES (Semanotus spp.) - NEVADA - S. juniperi and S. ligneus conformis collected at Eagle Valley Reservoir, Lincoln County, January 22, 1975, on Juniperus osteosperma by P.M. Murphy. Determined by J.A. Chemsak. These are new State records. (Bechtel).

CAMELLIA SCALE (Lepidosaphes camelliae) - ALABAMA - Taken on Camellia japonica January 28, 1975, in Covington County. Collected by D. Bean. Determined by M.L. Williams. This is a new county record. (McQueen).

FOREST AND SHADE TREES

SOUTHERN PINE BEETLE (Dendroctonus frontalis) - NORTH CAROLINA - Beetle-killed timber salvaged again greater than in other Southeastern States during January 1975 with 5.4 million board feet of timber and 25.17 cords of pulpwood salvaged from State and Federal lands. (USFS).

SPRING CANKERWORM (Paleacrita vernata) - KANSAS - Much activity noted during recent period of mild weather in Shawnee and Burton Counties; some mating observed. (Bell).

MAN AND ANIMALS

SCREWWORM (Cochliomyia hominivorax) - No cases reported from continental U.S. during period February 23-March 1. Total of 163 cases confirmed from Mexico. Number of sterile flies released in U.S. this period totaled 15,505,000, all released in Texas. Total of 115,939,600 sterile flies released in Mexico. (Vet. Serv.).

COMMON CATTLE GRUB (Hypoderma lineatum) - KENTUCKY - Larvae averaged 4.12 per head in backs of 25 Holstein dairy cows of various ages in Fayette County. (Barnett).

FACE FLY (Musca autumnalis) - ALABAMA - Adults collected on wall of home in eastern edge of Lauderdale County by M. Patterson. Determined by H.F. McQueen. This is a new county record. (McQueen).

HORN FLY (Haematobia irritans) - MISSISSIPPI - No adults found on cattle due to cold weather. Some adults noted previous week during warm weather on cattle in Oktibbeha County. (Robinson). OKLAHOMA - Some adults (2 per head) noted on cattle checked on warm day in Payne County. (Okla. Coop. Sur.).

STABLE FLY (Stomoxys calcitrans) - MISSISSIPPI - Adults noted resting on farm buildings in Oktibbeha County. (Robinson).

CATTLE LICE - OKLAHOMA - Mainly Haematopinus eurysternus (short-nosed cattle louse), heavy on cattle in Jackson, Noble, and Rogers Counties. (Okla. Coop. Sur.).

HOUSEHOLDS AND STRUCTURES

EASTERN SUBTERRANEAN TERMITE (Reticulitermes flavipes) - NORTH CAROLINA - First reported swarming of 1975 occurred February 17 and 24 at Gastonia, Gaston County, and at Raleigh, Wake County, during period of 70-degree temperatures. (Hunt).

BENEFICIAL INSECTS

CONVERGENT LADY BEETLE (Hippodamia convergens) - NEW MEXICO - Less than one per square foot noted in alfalfa near Carlsbad and Artesia, Eddy County. (N.M. Coop. Rpt.).

HONEY BEE (Apis mellifera) - NEW MEXICO - Noted collecting pollen from willow (Salix sp.), elm (Ulmus sp.), and cottonwood (Populus sp.). Brood-rearing expected. (N.M. Coop. Rpt.).

HAWAII INSECT REPORT

General Vegetables - MELON FLY (Dacus cucurbitae) adults and immatures heavy in backyard tomato plantings at Kahului, Wailuku, and Waikapu, Maui. Fruit loss estimated at 50-75 percent. (Miyahira).

Fruits and Ornamentals - Adults of a NOCTUID MOTH (Anua indiscriminata) collected at Hilo, Hawaii Island, during week ending March 7, 1975. Collector and determiner not given. This is a new island record. This noctuid has now been recorded from Oahu, Kauai, and Hawaii Islands. (Yoshioka). CITRUS SWALLOWTAIL (Papilio xuthus) larvae moderate on citrus at Kahului and Waikapu, Maui. Foliage damage light to moderate. Many adults observed in reported locations. (Miyahira). BANANA SKIPPER (Erionota thrax) larval infestation discovered at Pueo, Hawaii Island, during February 1975 by T. Serizawa. This is a new island record. This skipper now occurs on Oahu, Kauai, Maui, and Hawaii Islands. Delimiting survey in Hilo area February 27 indicated E. thrax well established and spread throughout a 4-mile area from Pueo and Hilo through Panaewa, Hawaii Island. Infestations and damage remain light throughout most areas of Oahu except at Kaneohe and Waiahole. Ranged light to moderate at Waikapu and Wailuku, Maui. (Yoshioka et al.).

Forest and Shade Trees - Single adult of a GLYPHIPTERIGID MOTH (Imma mylias) taken by J.W. Beardsley from light trap material at Hilo airport, Hawaii Island. This is first specimen taken on Hawaii Island. Larvae have been recorded from several leguminous trees on Oahu. (Beardsley).

Man and Animals - MOSQUITO collections from 76 light traps operated on Oahu during January 1975 totaled 1,233 Aedex vexans nocturnus females and 8,479 Culex pipiens quinquefasciatus females. Average Aedes counts were no higher than those for December 1974. Average Culex counts showed 5-fold increase over those of November and December 1974. (Vector Control Br., State Dept. Health).

DETECTION

New State Records - LONGHORNED BEETLES - Semanotus juniperi, S. ligneus conformis - NEVADA - Lincoln County. (p. 172).

New County and Island Records - ALFALFA WEEVIL (Hypera postica) WISCONSIN - Oneida, Iron (p. 178). NEBRASKA - Brown, Cedar, Holt, Keya Paha, Rock (p. 182). BANANA SKIPPER (Erionota thrax) HAWAII - Hawaii Island (p. 174). CAMELLIA SCALE (Lepidosaphes camelliae) ALABAMA - Covington (p. 172). FACE FLY (Musca autumnalis) ALABAMA - Lauderdale (p. 173). A NOCTUID MOTH (Anua indiscriminata) HAWAII - Hawaii Island (p. 174). SOUTHERN CORN ROOTWORM (Diabrotica undecimpunctata howardi) NORTH DAKOTA - Renville (p. 182).

CORRECTIONS

CEIR 25(8):79 - FORAGE LEGUMES - ALFALFA WEEVIL (Hypera postica): Delete note from ILLINOIS. (Cooley).

CEIR 25(9):95 and 96 - CORN, SORGHUM, SUGARCANE - SOUTHERN CORNSTALK BORER (Diatraea grandiosella) should read (Diatraea crambidoides). Make same change in last line of note on page 96. Also on page 95, line 7: "... Infested stalks averaged 4.8 ..." should read "... Infested stalks averaged 4.2 ..."

LIGHT TRAP COLLECTIONS

ARIZONA - Mesa, 2/24-3/2, BL, ARMY CUTWORM (Euxoa auxiliaris) 2, BEET ARMYWORM (Spodoptera exigua) 44, BLACK CUTWORM (Agrotis ipsilon) 3, VARIEGATED CUTWORM (Peridroma saucia) 41, YELLOWSTRIPED ARMYWORM (S. ornithogalli) 11. FLORIDA - Gainesville, 2/28-3/6, BL, GRANULATE CUTWORM (Feltia subterranea) 14, SALTMARSH CATERPILLAR (Estigmene acrea) 1, yellowstriped armyworm 1. NEW MEXICO - Las Cruces, 3/1-7, 2BL, army cutworm 3, beet armyworm 99, variegated cutworm 109.

SUMMARY OF INSECT CONDITIONS IN THE UNITED STATES - 1974
(Continued from page 161)

FORAGE LEGUMES

Highlights:

ALFALFA WEEVIL damage to alfalfa in New York was widespread and sometimes severe. Larvae were well above economic thresholds in south-central and southwestern Pennsylvania, but damage and populations decreased in most central Maryland alfalfa. Economic damage was noted in Virginia. Alfalfa weevil was economic on the remaining 3,000 acres of alfalfa in Alabama, was economic in Indiana, and caused the most severe damage ever observed in Iowa. It is believed the number of overwintering alfalfa weevil eggs in Missouri is sufficient to cause economic infestations in spring 1975. Damage was economic on most alfalfa in Arkansas, and was noted in all alfalfa-growing areas of Kansas for the first time, with 800,000 acres treated. Losses to alfalfa in Nebraska are estimated at 8 million dollars, and heavy widespread infestations are expected in 1975. PEA APHID was exceptionally heavy in second-crop alfalfa in Minnesota, was heavy in North Dakota, and present earlier and was heavier than previous years in Nevada. ALFALFA BLOTCH LEAFMINER continued to spread southward through Pennsylvania and Delaware, and its introduction into Maryland is anticipated in 1975.

ALFALFA WEEVIL (Hypera postica) populations were generally spotty throughout VERMONT except for Rutland and Addison Counties where some areas had locally heavy populations. Generally, populations appear to be increasing. About 100,000 acres of pure and mixed stand alfalfa are now grown in State. Damage to alfalfa was very common, widespread, and in some areas very severe throughout NEW YORK. This was in contrast to the previous 3-4 years when alfalfa weevil damage was not at noticeable levels or of concern to growers. Tip damage averaged 75 percent in many heavily infested fields throughout Columbia, Cayuga, Tioga, Genesee, Orleans, and Niagara Counties. Areas with some heavily infested fields but with most fields at less than 25 percent tip damage were Dutchess, Washington, Otsego, Schuyler, Wayne, Yates, Seneca, Ontario, Wyoming, Steuben, Cattaraugus, and Erie Counties.

Alfalfa weevil larvae continued at moderate levels of 25 per sweep in southeastern PENNSYLVANIA. Fields needing treatment were scattered throughout the region. These levels were similar to those of 1973. Peak larval populations increased throughout the south-central and southwestern counties where they averaged 60 and 56 per sweep, respectively. These populations caused the number of fields requiring treatments to increase 30-40 percent in the south-central region. The larval populations in fields treated did not increase significantly in the southwest where economic populations have been common in the past several years.

Alfalfa weevil damage and population levels in 1974 declined in most central MARYLAND alfalfa. Only Howard and Cecil Counties experienced slight increases. Acreage requiring controls in Frederick, Baltimore, Harford, Howard, Montgomery, Carroll, and Washington Counties totaled 14,000 acres, a decrease of 2,000 acres

over 1973 estimates. Oviposition peaked the first 14 days in April in the central area. The first economic injury by alfalfa weevil appeared in Frederick, Carroll, and northern Montgomery Counties in early May with tip damage ranging 30-50 percent. Damage the first week in May appeared greater than in 1973. Damage had decreased by the third week of May when most larvae were in the third or fourth instar. Pupation peaked by June 3 when 85 percent of the first cuttings were taken off in central Maryland. Most growers cut early in order to avoid excessive losses. Growers in 1975 should expect only slight decreases in populations in Frederick and Washington Counties.

Alfalfa weevil eggs were hatching and larvae infested alfalfa in the southern Piedmont of VIRGINIA by March 15. Due to a mild winter and reduced winter mortality, heavier damage and earlier than usual oviposition were predicted. During the week ending March 29, surveys of 14 alfalfa fields showed that 51.3 percent of the tips were infested and that defoliation averaged 4.4 percent. Most larvae were small and based on 650 tips sampled, averaged 1.7 per tip. Based on the total acreage sampled, 45 percent of all acres were above treatment level. Growers were advised to delay treatment at this time in order to get those larvae from eggs that had not hatched. Damage was noneconomic at this time. Infestation, degree of defoliation, and larval sizes and counts continued to increase. By April 19, damage was economic. By May 3 damage was economic, and 62 percent of all acres sampled were above the recommended treatment level. By May 17, many alfalfa fields were being harvested, utilizing an effective cultural control. Populations were decreasing rapidly by May 24. By June 7, most of the first cutting of alfalfa had been completed.

Alfalfa weevil larvae were present in late January on experimental alfalfa in the Gainesville area of Alachua County, FLORIDA, due to unusually mild weather that month. Populations remained light during the season, with no definite increase being noticed compared to previous years. The first adult was collected February 19. Field observations during early March in Randolph, Chatham, and Wake Counties, NORTH CAROLINA, revealed 50 percent of 150 tips examined in detail harbored 1-3 larvae. However, cooler temperatures and control applications generally reduced the damaging population over the entire State to subeconomic numbers. Alfalfa weevil was heavy on the fast declining alfalfa acreage in ALABAMA. Treatments were applied to all of the remaining 3,000 acres. Damage also occurred on white clover, vetches, and other legumes.

Alfalfa weevil egg counts for spring 1974 peaked in late April, somewhat later than in 1973 in KENTUCKY. Larvae were first active in alfalfa during the first part of March in the southern areas. By mid-April, most fields in the south-central area needed treatment and by late April treatments were being applied in the central area.

Alfalfa weevil larval populations in INDIANA were above 1973 levels in time and relation to alfalfa. Alfalfa averaged 4.7 inches tall in Daviess County March 15 and infestation averaged 55 percent with an average of 2.4 larvae per stem. In 1973, alfalfa was about 3 inches taller when that population level was reached, nearly 14 days later. Frost March 23 reduced the population but by the end of the month, with little growth, 69 percent of the

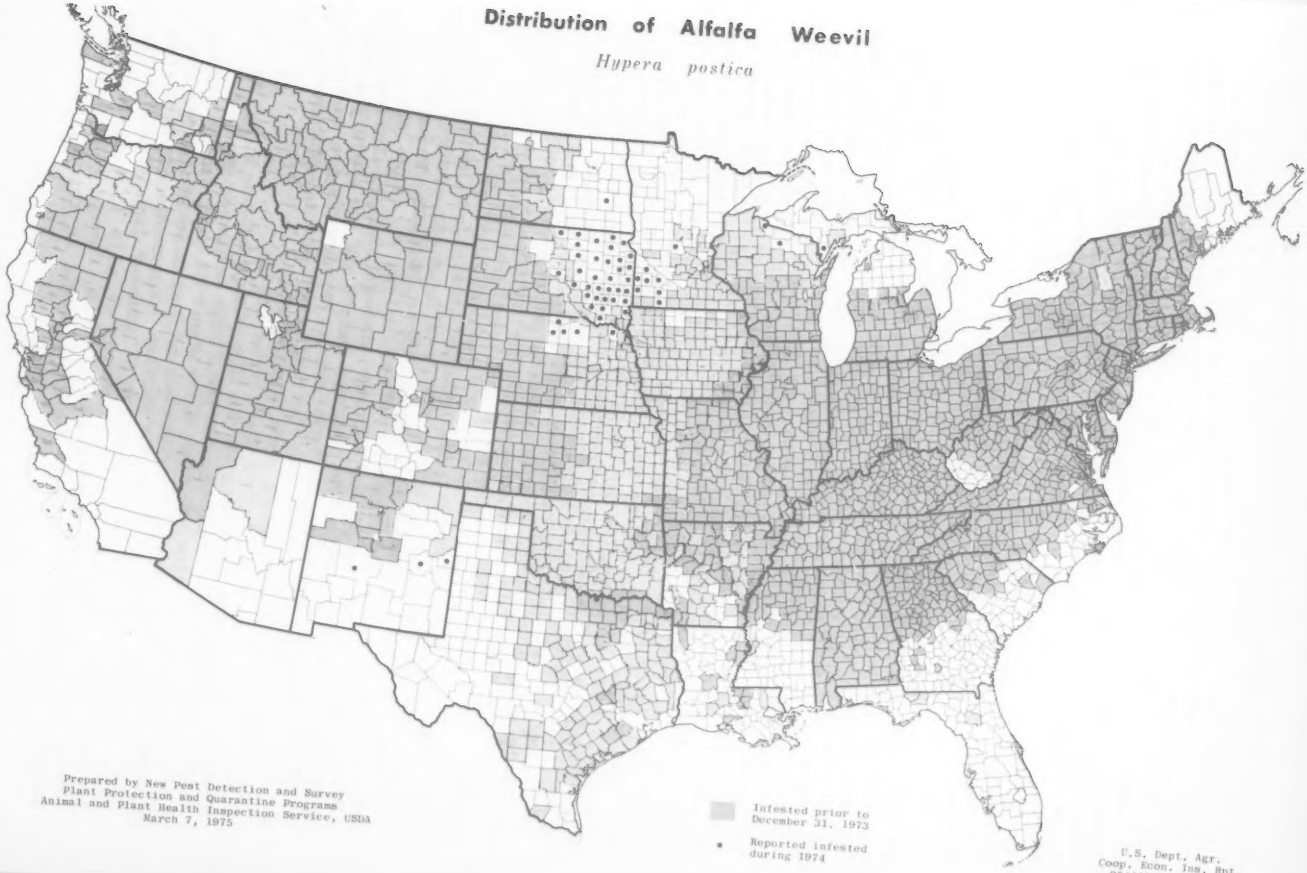
stems were infested with an average of 3.4 larvae per infested stem. On April 7, 79 percent of the stems (5.8 inches tall) had 4 larvae per stem. By April 19, alfalfa was 98 percent infested with 5.3 larvae per infested stem. Economic infestations were the rule as far north as Indianapolis and occasional economic infestations were noted in Vermillion and Randolph Counties. Heavy populations as far north as Howard and Warren Counties were unusual as the crop between Indianapolis and U.S. Route 30 has not been as heavily infested in recent years. Cutting could have controlled infestations in the northwest, north-central, and northeast districts in most cases. Some northeast district fields required chemical treatments.

Alfalfa weevil damage to alfalfa in ILLINOIS has continued to get progressively worse each year. Treatments were applied to 191,000+ acres in 1974, an area 45 percent greater than the treated acreage of 1973. This treatment saved growers about 8,615,000 dollars over and above treatment costs. The earliest hatch occurred in Massac County during late February. Feeding signs were noted on 70 percent of plant tips by March 8 and 11 percent in Johnson County. This early hatch was due to several days of unusually warm temperatures, averaging 30 degrees above normal. During the following week, development slowed considerably due to cooler temperatures. Tip feeding was noted at 52 and 11 percent in Pope and Washington Counties, respectively. Most larvae were first and second instars, but some third instars were noted in Massac County. By April 11, populations had increased slowly but were still below the economic threshold of 10 per sweep. Populations increased to the point where most fields in the southern third of Illinois required treatment during the week ending April 18. Counts ranged up to 70 per sweep. By April 26, most alfalfa in the southern area needed treatment. Populations in this area had reached 120 per sweep in the few remaining uncut fields by May 17. Relatively little damage was recorded in the northern half of the State.

Alfalfa weevil larvae from overwintering eggs were first collected the last week of April in WISCONSIN. Spring oviposition did not begin until May 20. Populations were light in first-crop alfalfa in all but a few exceptional fields in certain sandy areas. Pupation of larvae from overwintering eggs began June 5. Some alfalfa was cut in late May and early June, killing those larvae present. However, heavy rains June 8-16 delayed harvest and many larvae pupated and emerged as adults before harvest was complete. Heavy larval feeding was noted or reported in isolated alfalfa fields on sandy soils in southern Sauk, western Dane, Door, Kewaunee, Marinette, and Brown Counties. Some treatment of second-crop alfalfa was reported in Door County. After a brief appearance late in June and early July, adults went into diapause and were encountered infrequently the rest of the year. Larval populations ranged trace to light after mid-June. Parasitism by Bathyplectes curculionis (an ichneumon wasp) ranged 43-60 percent among larvae collected in Dane and Trempealeau Counties in late May and early June. A new parasite, Bathyplectes anurus, was introduced into Wisconsin May 30 near Oregon, Dane County. Specimens of alfalfa weevil taken on alfalfa in Oneida and Iron Counties, October 10, 1974, were collected and determined by M.S. Conrad. These are new county records.

Distribution of Alfalfa Weevil

Hypera postica



Infested prior to December 31, 1973

• Reported infested during 1974

Prepared by New Pest Detection and Survey
Plant Protection and Quarantine Programs
Animal and Plant Health Inspection Service, USDA
March 7, 1975

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Coop. Econ. Ins. Rpt.
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Alfalfa weevil damage was intensified in MICHIGAN during 1974 by cold, wet weather that retarded the growth of alfalfa, and hindered cutting or treatment. Peak parasitism by Microctonus aethiops (a braconid wasp) ranged 65-80 percent at Gull Lake, Kalamazoo County, much above the 1973 peak of 40 percent. During 1974, about 20,000 specimens of M. aethiops were collected in the Gull Lake area and released at the rate of 500 per site at 31 sites in 22 counties. It is hoped this parasitoid (in combination with others) will significantly reduce Hypera postica populations in the State, but predictions cannot yet be made. Alfalfa weevil infestations were not economic in MINNESOTA but significant population increases were noted in a few counties, particularly in the second crop. This weevil was found for the first time in Stearns, Lyon, Pipestone, Yellow Medicine, Lincoln, Jackson, Cottonwood, and Redwood Counties during 1974.

The most severe damage to alfalfa by alfalfa weevil ever recorded in IOWA was noted during 1974. Eggs averaged 80 per square foot in southern area fields during the week ending April 12. More than 90 percent were apparently spring laid, and the small number of overwintering eggs were nonviable. By the last week of April, eggs averaged 140 per square foot in southern area fields, and first instars ranged 1-2 per stem. Tip feeding ranged 10-64 percent. Some treatment was already underway at this time. Peak oviposition occurred in southern area fields during the last week in April, and during the first week in May larvae averaged 3.5 per stem in southern fields. Few larvae were noted in central area alfalfa. Damage was limited to 8 to 12-inch alfalfa in only the southern third of the State. Damage increased in most fields in the southern counties through the week ending May 17 where larvae ranged up to 175 per sweep. Little damage was noted in the west-central area. Damage in western area fields was reported during the first week in June. H. postica larvae prevented alfalfa regrowth in western area fields during the last 14 days of June. Late instars were found during mid-July in northern counties, but did not cause economic damage. Treated acreage ranged between 35,000 and 50,000. A severe chemical shortage prevented the treatment of additional acres.

Overwintering alfalfa weevil eggs ranged as follows by area per square foot in MISSOURI: Southwest 76-217, south-central 39-178, southeast 90-120, central 67-170, northern 184-360. These populations are all believed to be sufficient to cause economic infestations in spring 1975. Economic damage and populations were observed in fields statewide. Larvae ranged up to 1,000 per 100 stems in the southern and central areas. Severe damage was noted in the northwest area for the first time. This insect continued to be the most serious alfalfa pest in the State.

Alfalfa weevil was economic in 80-90 percent of the alfalfa acreage throughout ARKANSAS. Larvae first occurred in late February in the southwest area when about 60 percent of plants showed new growth. Larvae continued to increase statewide and were becoming heavy in late March when four consecutive nights with temperatures below 20 degrees F. caused significant reduction in population. Larvae were observed in alfalfa in Wilbarger and Foard Counties, TEXAS, during early March. Damage ranged 5-10 percent of alfalfa terminals in some fields in these counties.

Light populations were noted in late March in this same area. Populations averaged 2 per 20 sweeps in some fields. During late April, larvae damaged 70-100 percent of terminal growth in some fields in Hale County. Infestations in the county ranged up to 50 larvae per square foot. Many other counties in the Panhandle reported damage during 1974.

Alfalfa weevil eggs ranged 410-1,132 per square foot and larval counts were light in alfalfa early in January, in many areas of OKLAHOMA. Larvae began appearing in large numbers in southern areas the first week of February, in the central areas by mid-February, and in northern areas the first week of March. Fields were being treated in the southern half of the State the first week of March. By March 20, moderate to heavy infestations were present in all areas except the Panhandle and fields were being treated in all areas except the Panhandle and northwest, some in the southern counties for the second time. A heavy freeze occurred over most of the State during the period March 21-24. Nearly 100 percent of the larvae were killed in Payne County and 60-70 percent in Grady and Stephens Counties. Larval populations immediately began increasing with warmer weather and moderate to heavy infestations were present in most areas, including the Panhandle counties for the first time this year. Adults appeared in some areas by mid-April and were common in most areas during May and early June. Larvae were still present in Cimarron County through the end of June. The first adults of the fall were taken in Payne County the first week of October. By mid-November, eggs ranged 30-120 per square foot in some areas.

Alfalfa weevil was damaging in all alfalfa-growing areas of KANSAS for the first year, and usually needed at least one treatment for control. Many fields required a second treatment and in some cases three. Initial hatch and damage occurred earlier than usual. As early as February 5, some adult activity was noted in alfalfa stubble in Elk County and in Haskell County in mid-February. Hatching was underway in some southeast district fields by March 1. First hatch in this area in 1973 occurred the third week of March. During the first week of March, hatch was underway as far north as Doniphan and Lincoln Counties. During the second week of March, some hatch had occurred as far north and west as Republic County. Larvae were increasing rapidly in the southern counties of the southeast district.

Alfalfa weevil larvae ranged up to 8 per terminal in Cowley County, Kansas. By the third week of March, hatching was reported as far west as Gray County. Freezing temperatures from March 21-23 killed some larvae over much of the State, especially in the southeast where alfalfa terminals were frozen back substantially. Up to 81 percent of larvae were dead in Cowley County, but heavy populations of live larvae were still damaging. In the northeast and north-central districts, less than 5 percent were killed by freezing temperatures. In early April, untreated southeast and south-central district fields showed much damage and some treatment and damage were noticeable in some fields in the Kaw Valley where up to 4.1 larvae per terminal were found.

By April 12, damaging alfalfa weevil infestations were common throughout the eastern half of Kansas including most of the south-central district and in all the eastern two-thirds of the State by April 26. Pupation was beginning as far north as Washington and Clay Counties and some adult emergence was underway in the southeast area. Damaging infestations were reported in Finney, Rawlins, and Thomas Counties by May 3. Heavy damage was sustained in the northeast and north-central districts. Damage to alfalfa was heavy by May 10 as far west as Logan and Wallace Counties.

The first cutting of alfalfa in Kansas was 50 percent complete in the southeast, with some being cut as far north as Cloud County. H. postica larval populations decreased in most areas 7 days later except in the northwest and west-central districts. Some pupation and adult emergence was noted in Sheridan and Cheyenne Counties. Within two weeks alfalfa regrowth was generally good in the southeast district. Further north and west, poor regrowth was still being encountered in untreated stubble. Regrowth after the first cutting was generally good over most of the State by June 7 except in some drought-stressed southwest district fields. During the last half of August, isolated alfalfa fields were treated for damaging larval infestations in Hamilton and Sherman Counties. These were the first records of damaging late season infestations in Kansas. About mid-October, adults began moving back into alfalfa fields in Riley and nearby counties for fall oviposition and by late October were heavy, particularly in larger alfalfa. Oviposition was well underway by late October. During November and early December, eggs were found in Saline, Republic, Smith, Pawnee, Ford, and Haskell Counties. More than 800,000 acres of alfalfa were treated in 1974, nearly 4 times the acreage treated in 1973. About 43 percent of this acreage was treated twice and 7 percent three times.

Alfalfa weevil caused an estimated 8 million dollars damage to alfalfa, not including control costs, in NEBRASKA. Weevil activity was first reported from the southern tier of counties in mid-April. Larval populations and damage continued to increase gradually. By May 24, more than two-thirds of 116 fields surveyed in Custer, Dawson, Hall, Butler, Platte, Sarpy, Saunders, York, Fillmore, Franklin, Harlan, Phelps, Clay, Otoe, Thayer, Dundy, Hitchcock, Red Willow, Cherry, and Antelope Counties had economic infestations. Two York County fields averaged 1,248 larvae per 20 sweeps on this date. H. postica adults peaked June 11, ranging 0-394 (average 93) per 20 sweeps in Otoe County. Adults were heavy enough to damage second cutting regrowth in mid to late June in many fields in the southern half of Nebraska. In mid-November, adults averaged one per sweep in single fields of 6 to 8-inch alfalfa in Otoe and Lancaster Counties. Eggs were observed but no counts taken.

Heavy, widespread alfalfa weevil infestations are expected in the east, southeast, central, south, and southwest districts of Nebraska in 1975. Scattered economic infestations will also likely occur in the north and northeast districts. All counties in the State are now infested. Alfalfa weevil was taken on alfalfa by S. Koinzan during 1974 in the following counties: Brown May 27, Cedar May 28, Holt May 28, Keya Paha May 27, Rock May 27. All determinations by G. Manglitz. These are new county records.

Alfalfa weevil adults ranged 13-77 (average 48) per 100 sweeps in Lawrence County, SOUTH DAKOTA, May 23. Hatch began the same date, and first-instar larvae ranged 0-8 per 100 sweeps. Larval populations in Lawrence County were variable with up to 1,680 second and third instars per 100 sweeps taken June 14. All counties were found infested during an extensive survey in May and June. About 110,000 acres of alfalfa were treated, primarily in the northern Black Hills area, including portions of Butte, Lawrence, Meade, and Pennington Counties. Alfalfa weevil was found for the first time in 34 South Dakota counties in 1974.

Alfalfa weevil populations in NORTH DAKOTA were lighter in irrigated alfalfa in McKenzie and Williams Counties. Larvae averaged 325 per 100 sweeps and damaged tips averaged 64 percent. Adults were collected in Barnes County for a new county record. Surveys were negative in Burke, Renville, Richland, Ransom, and Sargent Counties. Early hatching in MONTANA resulted in some forage legume damage in Fallon, Carter, Wibaux, and Dawson Counties before harvest. The second crop suffered from larvae feeding in strips where the first crop windrows had lain. This occurred in spotty localities statewide. The complex of parasites and predators is adequate in many counties where early cutting has been practiced.

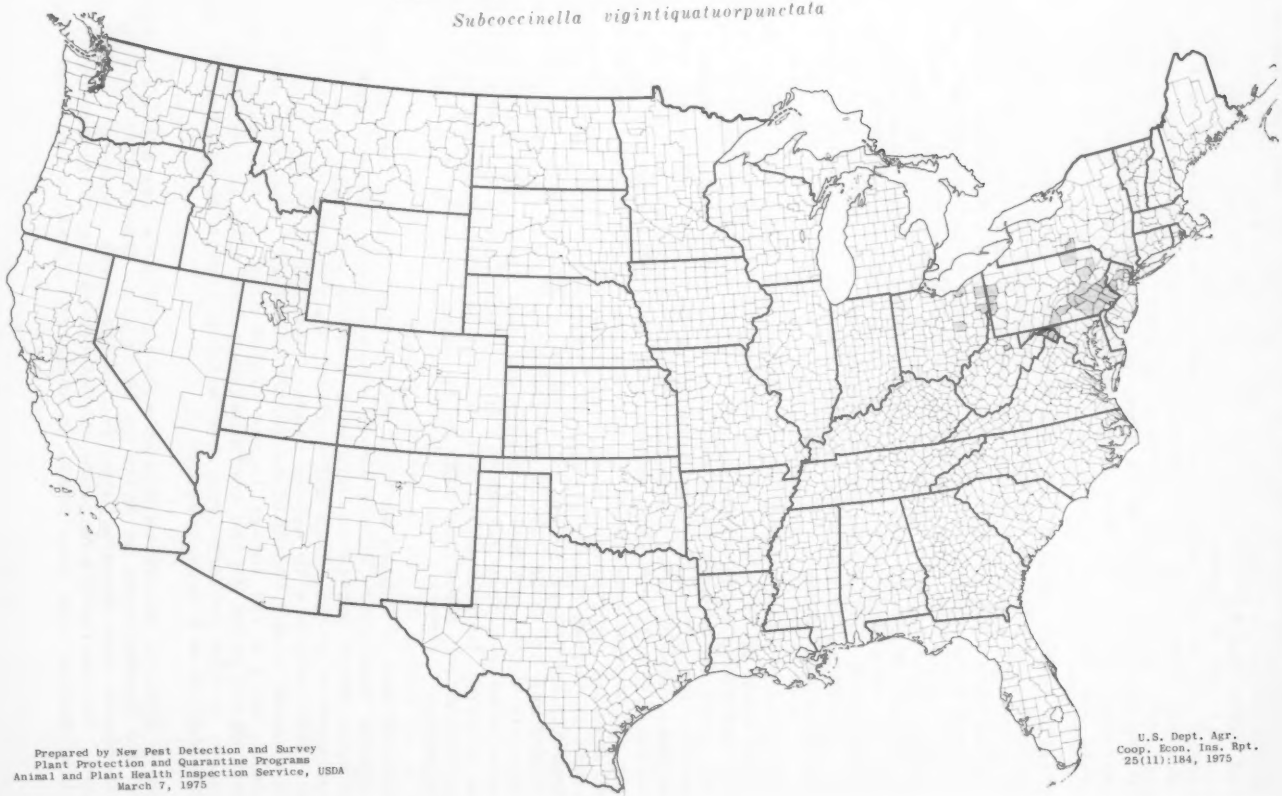
One alfalfa weevil larva per 35 sweeps was recovered during the first week of 1974 in alfalfa in Bernalillo County, NEW MEXICO, and was heavy in the Albuquerque area of Bernalillo County and the Corrales area of Sandoval County during the early summer months. Larval populations were often noted at 1,200+ per 100 sweeps, causing severe damage. Populations remained light in Valencia County but more widespread. Larval populations up to 650 per 100 sweeps were found in Rio Arriba County during the week of June 14. Substantial damage was observed in the area. Populations in Colfax County at mid-July ranged 5-7 per 100 sweeps. Populations decreased in late August to 20-25 adults per 100 sweeps and up to 25 larvae per 100 sweeps in Bernalillo and Valencia Counties. Twenty adults and 100 larvae per 100 sweeps were recovered from Torrance County. Quay County populations built up in early September. Alfalfa weevil larvae and adults were collected for the first time in De Baca, Socorro, and Curry Counties.

Alfalfa weevil damage in UTAH was heavier than in 1973 but much lighter than in 1972. The cool, stormy spring allowed most alfalfa to be harvested before treatments were needed in northern and central areas. With hot weather, much untreated acreage suffered moderate to severe damage, including delayed growth of the second crop. Populations in southwestern IDAHO were very light, only a few forage legume fields were treated. Less treatment was applied in the south-central area than in preceeding years. In the eastern area, the alfalfa weevil population was down somewhat from a normal year.

Heavy alfalfa weevil outbreaks were noted in a few alfalfa fields in the Touchet area of Walla Walla County, WASHINGTON. This is the first time damaging populations have been recorded in this area. Increasing populations caused concern in Kittitas County. Light populations were found in Adams and Franklin Counties. This

Distribution of European Alfalfa Beetle

Subcoccinella vigintiquatuorpunctata



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weevil continued to be the most serious pest of alfalfa in OREGON. Heavy larval infestations were widespread in Deschutes, Crook, and Jefferson Counties in early June. Larvae ranged 100-250 per sweep in the more heavily infested fields. Alfalfa weevil and Egyptian alfalfa weevil (Hypera brunneipennis) were an early problem on alfalfa in CALIFORNIA. Although infestations were not as severe as in 1973, treatment was needed in most areas. H. brunneipennis is the predominant species throughout the State. Biocontrol tests have not been too satisfactory as it is hard to establish surviving colonies.

Oviposition by alfalfa weevil began in mid-March in the central, western, and some northern counties of NEVADA. Unfavorable weather conditions in late April and early May retarded further oviposition, egg hatch, and larval development until mid-May when economic populations developed rapidly with the return of favorable weather. There is usually some difference in larval development and time of peak populations in the western counties including Churchill, Douglas, Lyon, Pershing, and southern Washoe, but in 1974 they occurred simultaneously. Peak larval populations of up to 160+ per sweep and damage occurred in late May and early June. Although some chemical applications were made in early May, most treatments were applied during late May and early June when larval infestations abruptly developed to economic levels. Chemical treatments were mostly completed by mid-June with the eastern and northeastern counties the last to be treated.

EUROPEAN ALFALFA BEETLE (Subcoccinella vigintiquatuorpunctata) was first found in PENNSYLVANIA in 1972. Known to be a pest of alfalfa, clover, and vetches in Europe, this coccinellid has been reported mainly from bouncing bet in the State and once from crownvetch. Extensive infestations were found from June 25 to July 17 but adults were found until September 12 in most of the eastern counties. European alfalfa beetle has also been reported from Maryland, New Jersey, New York, Ohio, and West Virginia.

SOUTHERN CORN ROOTWORM (Diabrotica undecimpunctata howardi) was taken from alfalfa in Renville County, NORTH DAKOTA, at the rate of 1 adult per 100 sweeps. Specimens collected and determined by W.J. Brandvik. This is a new county record.

ALFALFA BLOTCH LEAFMINER (Agromyza frontella) infested 20-30 percent of leaves in MAINE when alfalfa was cut on schedule. This was 10 percent heavier than in 1973. Delayed cutting increases infestation. Populations were below 1973 levels on first and second-cut alfalfa in VERMONT. Feeding mines were beginning to develop during the second week of June in most areas. No treatments were applied in most areas of the State. This species was observed more extensively throughout NEW YORK than in the past. Although it was present in first-cutting alfalfa, it caused severe pinholing and mining in second and subsequent cuttings in some areas. Pinholing and mining of most leaves on a plant involving 75 percent or more of the alfalfa plants in a field was reported from throughout Clinton and Washington Counties. Infestations of less than or equal to 50 percent were observed in Rensselaer, Schenectady, Delaware, Otsego, St. Lawrence, and Genesee Counties.

Heavy adult alfalfa blotch leafminer populations were noted in late April and early May in Berks County, PENNSYLVANIA. By June, larvae and pupae were common in some fields in Lebanon and Centre Counties. Adults, larvae, and pinhole damage were reported through June, July, and August from Lycoming, Lehigh, and Monroe Counties. Pinhole damage was also noted on Medicago lupulina (black medic) near a Centre County alfalfa field. Surveys in the spring were again negative for this leafminer in MARYLAND. However, this species continues to spread southward through Pennsylvania and Delaware. As populations were found in the Newark area of Delaware in 1974, introduction into Cecil, Harford, or Kent Counties, Maryland, can be expected at any time during the 1975 season.

Although PEA APHID (Acyrthosiphon pisum) populations increased in KENTUCKY alfalfa by late June, they did not seem as damaging as in past years. Populations were generally light and noneconomic throughout the season in ILLINOIS alfalfa. Up to 100 per sweep were noted in some fields in the southern third of the State during early May, just before cutting. Treatments were applied to 5,300 acres of alfalfa saving growers about 10,800 dollars over and above treatment costs.

Pea aphid nymphs emerged from overwintering eggs on alfalfa in WISCONSIN April 9 in Jefferson County and by April 24 a few individuals contained embryos. Reproduction began about April 26. Parasitism by Praon sp. (a braconid wasp) ranged up to 85 percent in all districts early in May. By May 15, winged specimens had developed in alfalfa and appeared in some pea fields by May 22 with reproduction in peas beginning immediately. Populations were generally light, seldom exceeding 10 per sweep until late July when counts ranged 100-120 per sweep in a few alfalfa and late pea fields in Dane and Columbia Counties. Some treatment of late peas was necessary. Through August and September, populations decreased to less than 1 per sweep in alfalfa. Collections made October 22 in Sauk and Dane Counties showed very light populations with about 3 percent being oviparae. Except for the period late in July when populations became heavy in a few fields, parasitism by Praon sp. appeared to effect good natural control of pea aphid throughout the season.

Exceptionally heavy pea aphid populations were noted on second-crop alfalfa in scattered fields in southwest and south-central MINNESOTA in July. Virtually uncountable populations persisted for 7 days or more. Alfalfa was under drought stress at this time and the amount of wilting due to aphids was difficult to assess. The time of second cutting was near and damage was held to a minumum. These heavy populations were not observed on the third crop. Populations in NORTH DAKOTA had reached 1,000 per 100 sweeps by June 14 in first-cutting alfalfa in Ransom, Barnes, La Moure, Richland, Sargent, and Dickey Counties. By June 19, populations were heavy in Cass, Traill, and Grand Forks Counties, and reached 5,000 per 100 sweeps in these counties. Second-cutting alfalfa was retarded due to infestations and lack of moisture.

Pea aphid populations on alfalfa remained light up to the first cutting in SOUTH DAKOTA. Economic populations developed in the east-central area during the first 14 days of July. Treatments were applied in Brookings County. Heavy infestations of pea aphid

occurred in west-central OKLAHOMA in alfalfa from late February to late March and in a few southwest, south-central, and central counties in late March. Counts were light to moderate in most other areas and continued into late May. Only very light populations were reported the rest of the year.

Pea aphid averaged about 20 per square foot on newly planted alfalfa in Eddy County, NEW MEXICO, during mid-January. By February 1, populations ranged 5-10 per square foot in Roosevelt County. Grazed fields showed some reduction in populations until February 15. Control of Therioaphis maculata (spotted alfalfa aphid) in Eddy and Chaves Counties reduced pea aphid populations. By March 15, all fields showed uniform light pea aphid populations. Treated fields, however, were naturally barren of parasites. Untreated fields showed parasite activity. Heavy pea aphid population buildups in Dona Ana County during March decreased to 30-50 per 100 sweeps in early April with predator activity very noticeable. Pea aphid populations ranged up to 40-50 per 100 sweeps in Eddy County by late April. By May 1, populations ranged 60-80 per 100 sweeps in De Baca County, and 30-40 in Dona Ana County, with predators being very active. During mid-May populations remained at 50-100 per 100 sweeps in Sandoval County. By mid-July, populations approached 600 per 100 sweeps. No predators were observed in fields with heavy aphid populations. In Chaves County, 400 per 100 sweeps were noted during early September, 120-200 per 100 sweeps by early October, and 80-90 by late October.

Pea aphid infestations on alfalfa for seed in Churchill, Humboldt, Lander, and Pershing Counties, NEVADA, required the usual chemical treatments from May through August, but economic populations were present earlier and heavier than in previous years. Counts of 400 per sweep were not uncommon and one field in Pershing County averaged 7,500 per sweep. Infestations in alfalfa hay were similar to those in seed alfalfa except they did not reach the extreme high levels found in Pershing County and were present as economic populations earlier in the year. In early season infestations, or when plant growth was short, the plants were stunted, yellowish, and completely covered with honeydew. Economic infestations were present in the southern area in late March and developed northward as the growing season progressed. A total of 19,979 acres were treated in Churchill, Douglas, Elko, Esmeralda, Eureka, Humboldt, Lyon, Pershing, Nye, and White Pine Counties with over half of the treatments applied in July. In some instances, recommended treatments did not give adequate control on either seed alfalfa or alfalfa hay. Pea aphid ranged up to 1,000 per sweep in some isolated southwestern IDAHO fields. Many fields required treatment in the south-central area. Many fields in the eastern section, especially in the Mudlake and Terreton areas, were noted with seriously heavy populations. Repeated treatments were necessary in many cases.

LYGUS BUGS were of some concern on alfalfa. Lygus hesperus and L. elisus populations in the lower Yakima Valley in Yakima County, WASHINGTON, were much heavier than average. Only moderate control was achieved in alfalfa seed crops with the heavy use of broad spectrum insecticides. Damage to alfalfa seed ranged up to 50 percent in some cases. L. hesperus was the prevalent species,

especially later in the season. Populations in Walla Walla County and the Columbia Basin were slightly above average. Populations in IDAHO were normal but late-season populations were extremely difficult to control using recommended pesticides in alfalfa-seed growing areas. Lygus lineolaris (tarnished plant bug) was active in alfalfa in OKLAHOMA from mid-March to early November. Heavy populations were reported only from the west-central counties from mid-May to mid-June.

THREECORNERED ALFALFA HOPPER (Spissistilus festinus) occurred in alfalfa from early July to mid-October in OKLAHOMA. Populations were quite variable but heavy infestations were reported in Grady and Garvin Counties in late July, Muskogee County in mid-September, and Caddo and Washita Counties in early October. Threecornered alfalfa hopper ranged 0-15 per 100 sweeps in Dona Ana County, NEW MEXICO, in early April. By late June, populations approached economic levels with 350-400 per 100 sweeps recovered in alfalfa. Some girdling was also apparent. Up to 350 nymphs and adults per 100 sweeps were observed at this time in Bernalillo and Valencia Counties. By mid-July, populations ranged 16-25 per 100 sweeps in Eddy County and up to 40 per 100 sweeps in Dona Ana County. Populations ranged 32-40 by mid-August in Chaves County. Populations by mid-September ranged 50-100 per 100 sweeps in Valencia County and up to 1,000 per 100 sweeps in Grant County, with much girdling observed in mid-September.

GRASSHOPPERS a few first and second-instar nymphs of Melanoplus differentials and first instars of Melanoplus sp. had been swept from alfalfa and clover in Langlade and Portage Counties, WISCONSIN by June 12. M. femurrubrum nymphs began emerging in southern counties late in June after first-crop alfalfa was harvested. Emergence was not complete until about August 9. The first M. femurrubrum adult appeared about August 21. Adults continued active until early November. Some M. sanguinipes and Dissosteira carolina adults were noted in grassy margins of fields and roadsides from late July throughout August. Populations were lighter than usual in all sectors of the State, rarely exceeding 5 per sweep except on sandy soils near Brodhead in Rock and Green Counties where counts ranged 5-10 per sweep in several fields.

PACIFIC SPIDER MITE (Tetranychus pacificus) populations began increasing on seed alfalfa in Churchill, Humboldt, and Pershing Counties, NEVADA, in early June. Economic infestations were present from June through early August and were heavier and more widespread than in previous years. About 8,000 acres were treated mostly in July. Another 5,200+ acres were treated in conjunction with Lygus spp. (lygus bugs) and Acyrthosiphon pisum (pea aphid) control during July and early August.

SOYBEANS

Highlights:

Heavy VELVETBEAN CATERPILLAR populations predicted for 1974 in North Carolina never materialized. Populations were lighter in Florida than for the past four years. LESSER CORNSTALK BORER caused more than normal damage in South Carolina soybeans. SOYBEAN LOOPER was heavier in Florida than the past four years. Late season infestations of GREEN STINK BUG in South Carolina were worse than for the past ten years. SOUTHERN GREEN STINK BUG populations were

much heavier in Florida than in previous years. THREECORNERED ALFALFA HOPPER caused economic damage to soybeans for the first time in South Carolina.

The heavy VELVETBEAN CATERPILLAR (Anticarsia gemmatalis) populations expected in NORTH CAROLINA did not materialize. Samples in 70 fields scattered over the entire Coastal Plain revealed very few larvae. There were no losses to soybeans due to this pest in the State. A. gemmatalis is the main pest of soybeans in FLORIDA. From Tallahassee, Leon County, westward to Escambia County populations were lighter than in the previous 4 years. Damaging populations occurred in late August about 10 days later than during the previous two years. In general, an average of less than 2 applications of insecticide per field was used compared to 3 per field in previous years. Larvae averaged 8 per row foot and caused economic defoliation in a 100-acre field in northwest Alachua County by August 13. This species was a pest in numerous fields in the coastal and central counties of ALABAMA with the heavier populations in the southwest area. They occurred further north into Dallas and Montgomery Counties.

LESSER CORNSTALK BORER (Elasmopalpus lignosellus) caused much more severe damage to soybeans in SOUTH CAROLINA than normal. One Newberry County field was replanted three times, the last being in late July. The last planting was damaged to the extent that only 50 percent of the stand remained. Lesser cornstalk borer caused heavy soybean damage in several fields in Garvin, Payne, and Wagoner Counties from mid-July to mid-August in OKLAHOMA.

GREEN CLOVERWORM (Plathypena scabra) infestations were present in soybeans in McCurtain County, OKLAHOMA, by mid-July and in several other southeast and east-central counties by mid-August. Scattered heavy damage continued in these areas and in Garvin County into mid-September.

SOYBEAN LOOPER (Pseudoplusia includens) infestations were heavier on soybeans in the northern part of FLORIDA during late summer than in the previous 4 years. Treatments were needed in 10 percent of the fields sampled in Gadsden County.

MEXICAN BEAN BEETLE (Epilachna varivestis) was a major pest of soybeans in Caroline, Queen Annes, Dorchester, Talbot, Wicomico, Somerset, Worcester, Prince Georges, St. Marys, Charles, Anne Arundel, and Calvert Counties, MARYLAND. Treatments were applied to 253,700 acres. Estimates of the percentage of acreage treated with systemics varies among counties from 50-70 percent. Adults were active in the earliest soybeans on the Eastern Shore but heavy damage remained spotty, mainly due to the wide usage of systemic insecticides. First-generation larval injury was light and (spotty) moderate through June and the first 14 days of July. Second-generation populations in late July, August, and into September were moderate to heavy with larval populations ranging 15-20 per row foot in the heaviest infested fields on the Eastern Shore. Generally, these late season population levels were below 1973 levels. This however, was mainly due to the wide use of systemics and high rates of parasitism by Pediobius fovealatus.

This parasite was released in all southern Maryland and Eastern Shore counties, as well as in Virginia and Delaware. Parasitism rates in September on the Eastern Shore ranged 67-99 percent with the higher rates in Wicomico, Worcester, and Somerset Counties, and lower rates north of Wicomico County and in southern Maryland.

Mexican bean beetle adults were heavy in soybeans in Caroline County, VIRGINIA, ranging 1-2 per row foot June 21. By July 17, they were reported to have increased rapidly although injury to soybeans was still light. Untreated green beans at the Painter Station were completely defoliated and numerous calls from home gardeners were received. Populations and damage to soybeans were light throughout the southern Tidewater region July 24. Infestations were spotty at best but represented potential problems if populations built up. Larvae and new adults were reported by August 7 in moderate numbers in a few Northumberland County soybean fields. Control was not warranted due to the light population of E. varivestis and heavy predator populations. Populations and damage remained spotty with only early planted soybeans showing most of the damage August 15.

New-generation Mexican bean beetle adults were appearing in Virginia Beach and Northumberland County, Virginia. A sample of 30 fields taken in Westmoreland County (670 acres) August 23 showed an average 3.9 per 30 row feet, and defoliation averaged 5 percent. In Isle of Wight County, a 28-field project (666.5 acres) averaged 5.6 beetles per 30 row feet, average defoliation was 5 percent. No economic infestations were found. A sample of 30 fields taken in Westmoreland County (670 acres) by August 29 showed an average of 11.1 beetles per 30 row feet, defoliation averaged 5 percent. In Isle of Wight County, a 28-field project averaged 21.4 per 30 row feet, average defoliation was 5.9 percent. This was up considerably from the past week. A subeconomic population was reported as far west as Appomattox County September 6. It is unusual to find heavy populations this far west in Virginia. For the week preceding September 13, a sample of 30 fields taken in Westmoreland County showed an average of 33.2 beetles per 30 row feet, defoliation averaged 6 percent. In Isle of Wight County, a 28-field project averaged 48.08 per 30 row feet, the average defoliation was 13.8 percent. This was up considerably from the past week. Three economic infestations (11 percent of all fields) were detected in Westmoreland County.

The incidence of Mexican bean beetle injury deviated little from an average year in NORTH CAROLINA. About 4 percent of the soybean fields had economic injury. Surveys and reports indicated that the heaviest injury occurred in the Robeson and Cumberland County area. Some fields in that area were treated with 2 or more insecticide applications for control. Infestations of Mexican bean beetle were heavier in SOUTH CAROLINA soybeans than in 1973. Economic damage was scattered. Mexican bean beetle infested about 100,000 acres of soybeans throughout southern INDIANA south of Indianapolis, but more frequently on the eastern side than has been the case in the past 2 years. Some treatments were required but overall losses probably did not exceed an average of one bushel per infested acre.

Heavy BEAN LEAF BEETLE (Cerotoma trifurcata) damage occurred in Logan County, KENTUCKY, soybeans in the seedling stage. Statewide, damage was minor and much less severe than in 1973. In Mississippi, bean leaf beetle adults ranged 4-5 per 25 sweeps in soybeans in Lowndes, Noxubee, and Oktibbeha Counties. Populations were stable throughout summer with soybean plants growing ahead of the populations. Near economic defoliation occurred in late August in the northern hill counties.

A general infestation of GREEN STINK BUG (Acrosternum hilare) and Nezara viridula (southern green stink bug) occurred throughout SOUTH CAROLINA on soybeans in late October and early November. Infestations were heavy from mid-State to the coast and were on mostly mature soybeans. Many growers were forced to accept some damage as the waiting periods on insecticides would delay harvest. This was the worst infestation this late in the season in at least 10 years. Green stink bug economically infested 10,000 acres of soybeans in Cherokee County, KANSAS. Infestations in OKLAHOMA soybeans ranged 0-35 per 30 row feet in the east-central and southeast counties and up to 15 per 30 row feet in Tulsa County from late September to mid-October.

SOUTHERN GREEN STINK BUG (Nezara viridula) populations in northern FLORIDA were much heavier than in previous years on ragweed and other weeds. Populations shifted to soybeans during August, about 30 days earlier than in previous years, and reached damaging levels by mid-September. The late-September populations did not reach the damaging levels of 1973. About 50 percent of the soybean fields in Gadsden County needed treatment. Populations averaged one per 3 row feet in a 100-acre field in northwest Alachua County by August 13, when treatment was needed.

REDLEGGED GRASSHOPPER (Melanoplus femurrubrum) caused limited damage along soybean field margins adjacent to roadsides during summer in WISCONSIN. Populations, mainly second-instar nymphs, averaged 2 per 25 sweeps July 9. Gradual increases were noted through the month to 3-5 per 25 sweeps over most of the State. Counts of one per sweep were common along field edges throughout August and early September with little resultant damage.

THREECORNERED ALFALFA HOPPER (Spissistilus festinus) caused economic damage to soybeans in Chester County, SOUTH CAROLINA in July. This was the first reported economic damage by this pest to soybeans in the State. Moderate to heavy populations damaged soybeans in many east-central and southeast counties of OKLAHOMA and in Tulsa County from mid-July to late August. Much lodging of plants occurred in August and September.

PEANUTS

LESSER CORNSTALK BORER (Elasmopalpus lignosellus) damaged peanuts from mid-June to mid-September in OKLAHOMA. Infestations reached 25 percent in Marshall County by early July and ranged up to 55 percent in some areas in late July and August. Larvae re-occurred during the season as major pests of peanuts throughout the 9-county commercial-growing area in ALABAMA. Treatment efforts were difficult. The first damaging reports came from Pike County July 5 in a 1,000-acre field. This date is unusually early for a damaging population and signaled the beginning of one of the

years of heavy populations. Preliminary estimates of damage and control costs on the 200,000 acres will approximate 4,000,000 dollars.

REDNECKED PEANUTWORM (Stegasta bosqueella) infestations were noted from late June to mid-September in OKLAHOMA, but populations were unusually light in most areas in 1974. The heaviest were 50 percent infested terminals in a few areas in mid-August.

SOUTHERN CORN ROOTWORM (Diabrotica undecimpunctata howardi) infestations were lighter in VIRGINIA than in the past 3 years due to dry weather in July. Unfortunately, dry weather in July also reduced the effectiveness of insecticides applied to pegging time for peanuts. The mean number of damaged pods in untreated checkplots was 19.8 percent on 6 plots. Damage ranged up to 50 percent in some untreated fields but infestations were spotty.

TOBACCO THRIPS (Frankliniella fusca) populations in peanuts were heavier than usual in VIRGINIA. Some systematic insecticides failed to give good control and a foliar application was required to control these insects. Research indicates that thrips control is not economical but large numbers of growers continue to treat. F. fusca and other species were serious pests on 55 percent of 200,000 acres of peanuts grown in ALABAMA where no preplant systemic treatments were used. The first reports of damage occurred in Coffee County May 22 and was areawide by June 3.

Spot infestations of TWOSPOTTED SPIDER MITE (Tetranychus urticae) were observed during early August in Chowan, Hertford, Gates, Northampton, and Halifax Counties, NORTH CAROLINA. However, damage was much less severe than in previous years due to prompt controls and heavy rains during August. About 37,000 acres of peanuts are treated annually in this area for spider mite control.

Vespula germanica (Fabricius), An Adventive Yellow Jacket in the Northeastern United States (Hymenoptera: Vespidae)

A.S. Menke 1/ and Roy Snelling 2/

Vespula germanica (Fabricius) is a common Old World species found throughout Europe below 65 degrees N, north Africa, the Canary Islands, Asia Minor, northern India, and Palearctic Asia. It has been introduced and established in New Zealand. Reports of germanica in the New World were believed by Bequaert (1932) to be based on misidentifications of the North American species maculifrons (du Buysson), and Miller (1961) did not recognize the presence of germanica in his review of the North American species of Vespula. It is apparent, however, that the species is established in the Northeastern United States and probably was introduced within historic times, possibly more than once.

The earliest known record for this wasp in the United States is based on a single worker in the collection of the Los Angeles County Museum of Natural History taken at Ithaca, New York, August 18, 1891. The species evidently remained uncommon through the ensuing 60 or 70 years; a few specimens from the vicinity of Ithaca were collected during the period 1920-1950. In 1968 a single female was taken at Walkersville, Maryland, from the attic of a house (U.S. National Museum). Since that time the wasp has become increasingly abundant and is common in areas of New York (in Ithaca it is said to be more common now than the native maculifrons), Pennsylvania, New Jersey, Delaware, and Maryland. Pest control operators in the Washington, D.C., area report that germanica is a pest species because it commonly builds nests in attics and walls of homes. In contrast, maculifrons and vulgaris (Linnaeus), the common native species, seem to prefer subterranean sites for nests. We know of only one U.S. record of a subterranean germanica nest (Jacobson, 1974).

Vespula germanica most closely resembles maculifrons. The accompanying keys and figures illustrate the differences between these two species, as well as vulgaris, the only other native eastern species likely to be confused with germanica.

Females (antenna with twelve articles)
Queens (length 15 mm. or more)

1. Basal black band of tergum II parallel sided laterally but with a posteromedian lobe that is either narrowly triangular or parallel sided with apex acuminate, apex of lobe attaining hind margin of tergum or nearly so (figs. 4-6); cutting margin of third mandibular tooth concave (fig. 24); largest setigerous punctures of scutum between parapsidal line and tegula usually separated by a puncture diameter or less; clypeal disk with one or three small, black spots.....germanica (Fabricius)

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- Basal black band of tergum II broadly triangular, apex not reaching hind margin of tergum (figs. 10-12, 17-20); cutting margin of third mandibular tooth straight or weakly concave (figs. 25-26); largest setigerous punctures of scutum between parapsidal line and tegula mostly separated by more than a puncture diameter; clypeal markings variable.....2

2. Hind margin of black area of tergum I usually straight laterad of midline (fig. 12), but occasionally with lateral emargination (figs. 10-11); black portion of tergum I solid without two yellow spots.....vulgaris (Linnaeus)

- Hind margin of black area of tergum I typically deeply intruded by yellow laterally so that a transverse, triangular, median black lobe with narrow basal stalk is delimited (figs. 17-19), or, if hind margin straight laterad to midline, then black area containing a pair of narrow, transverse yellow spots (fig. 20).....maculifrons (du Buysson)

Workers (length 14 mm. or less)

1. Yellow genal band interrupted by black at middle of outer orbit; yellow band along hind margin of pronotum regular, nearly parallel sided throughout; occipital carina usually evanescent below, ofter interrupted before reaching mandible base; cutting margin of third mandibular tooth straight or slightly concave.....vulgaris (Linnaeus)

- Yellow genal band regular, continuous along outer orbit; yellow band along hind margin of pronotum variable, often irregular; occipital carina usually discrete and continuous to mandible base; cutting margin of third mandibular tooth variable.....2

2. Cutting edge of third mandibular tooth slightly concave (figs. 22-23); tergum II usually without free, lateral black spot (figs. 13-16).....maculifrons (du Buysson)

- Cutting edge of third mandibular tooth strongly concave, apex of tooth thus accentuated (fig. 21); tergum II usually with free circular black spot laterally (figs. 1-2) .....germanica (Fabricius)

Males (antenna with thirteen articles)

1. Basal convexity of last tergum, as seen in lateral profile, usually meeting flat, apical part of tergum through a vertical, truncate interface (fig. 31), or at least a rather abrupt sinuate curvature (fig. 32); aedeagal head flattened in lateral profile (fig. 28).....maculifrons (du Buysson)

- Basal convexity of last tergum, as seen in lateral profile, meeting flat, apical portion at an obtuse angel (fig. 33); aedeagal head variable.....2

2. Aedeagal head flatteneed in lateral profile (similar to fig. 28); base of aedeagal head as seen from below with lateral, spinelike processes (similar to fig. 27); central yellow frontal spot separated from yellow inner orbital band by black band whose width usually equals socket diameter; terga III-V without free circular, black spots laterally .....vulgaris (Fabricius)

- Aedeagal head inflated in lateral profile (fig. 30); base of aedeagal head as seen from below with lateral, arcuate lamellae (fig. 29); central yellow frontal spot usually continuous with lateral, yellow orbital band, or the two narrowly separated by black band whose width is less than socket diameter; terga III-V usually with free circular, black spots laterally.....germanica (Linnaeus)

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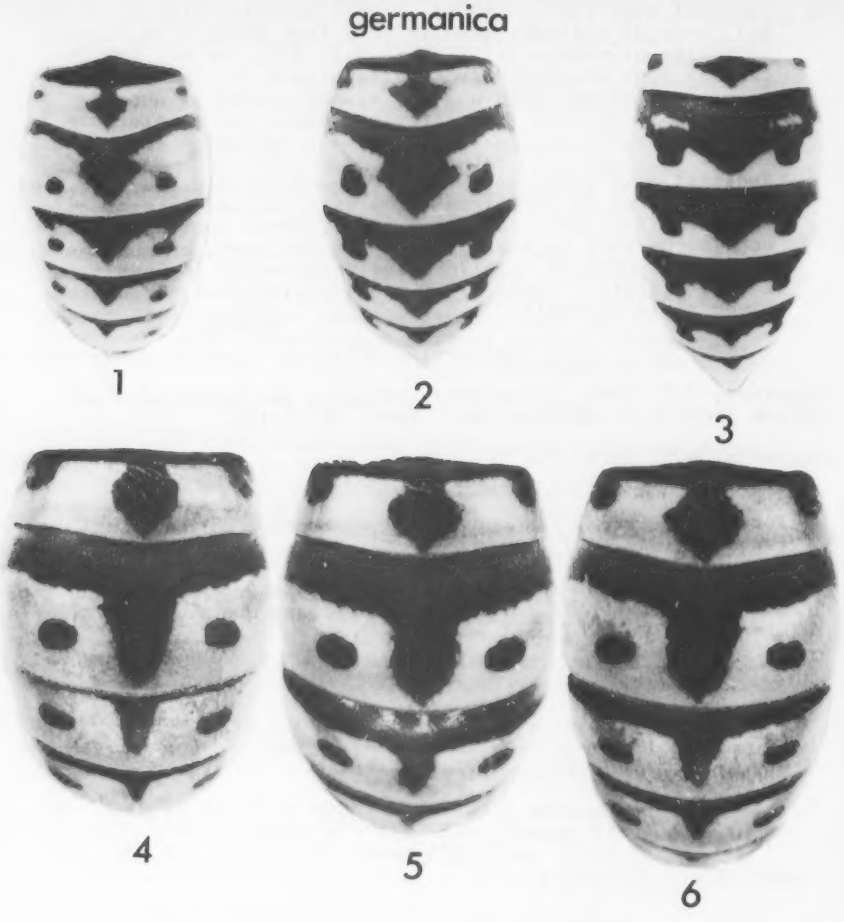
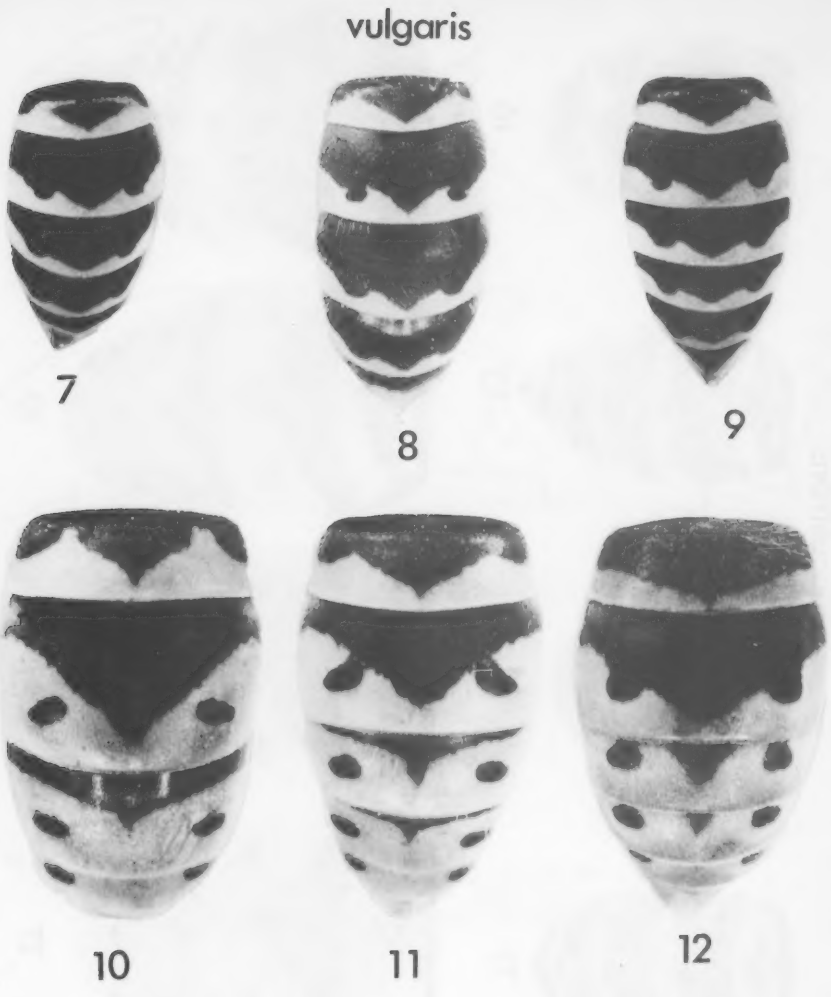
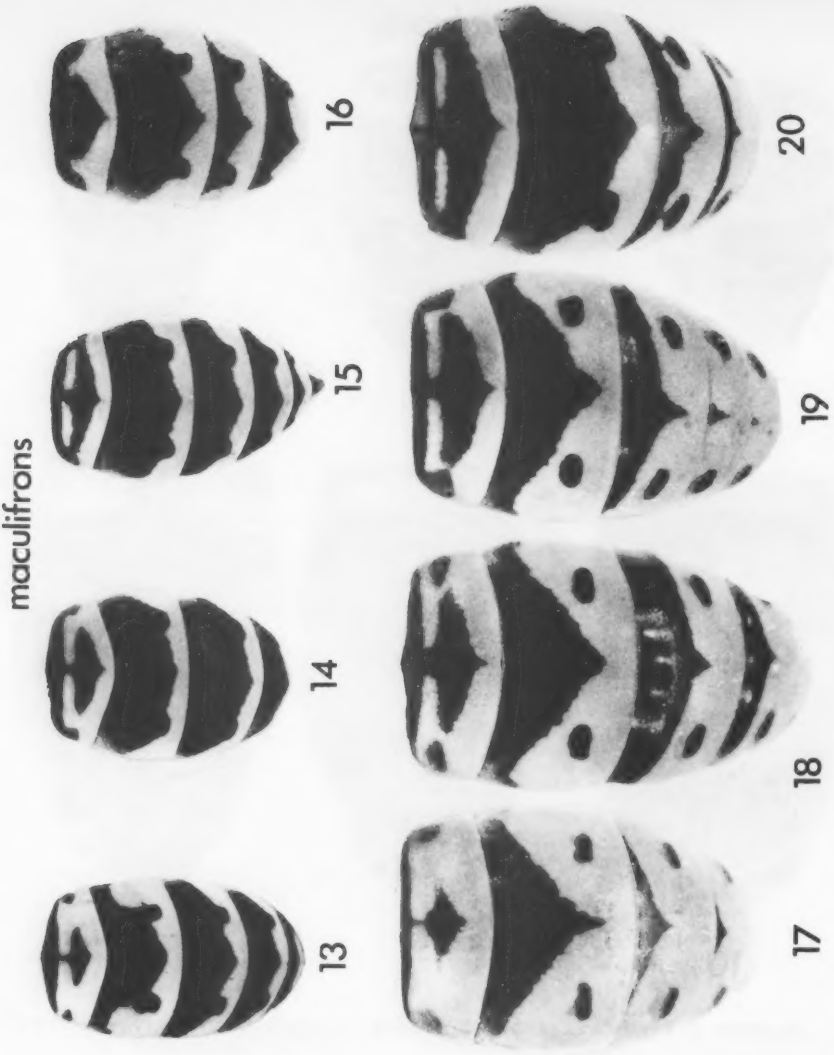


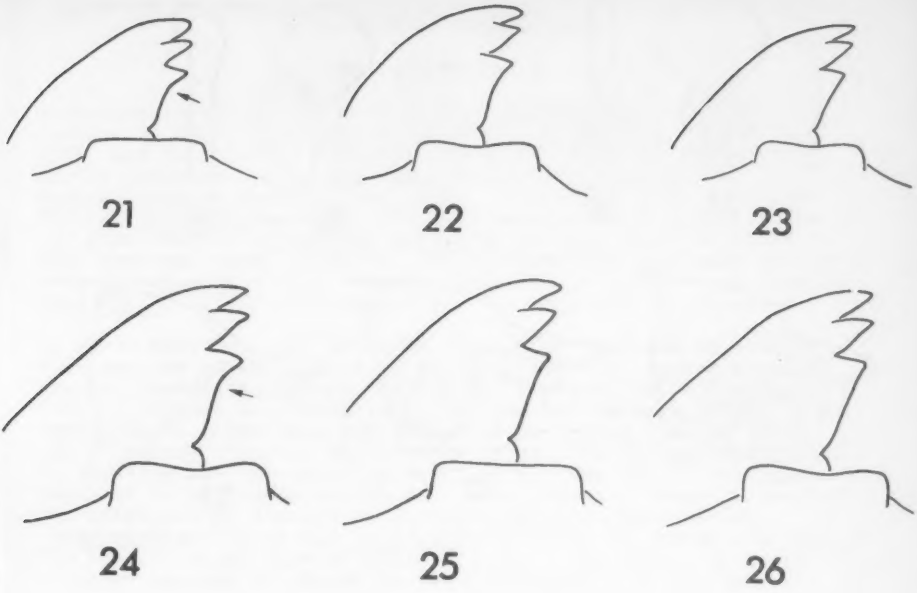
Figs. 1-6, Vespula germanica, gaster in dorsal view: 1-3 workers; 4-6, queens.



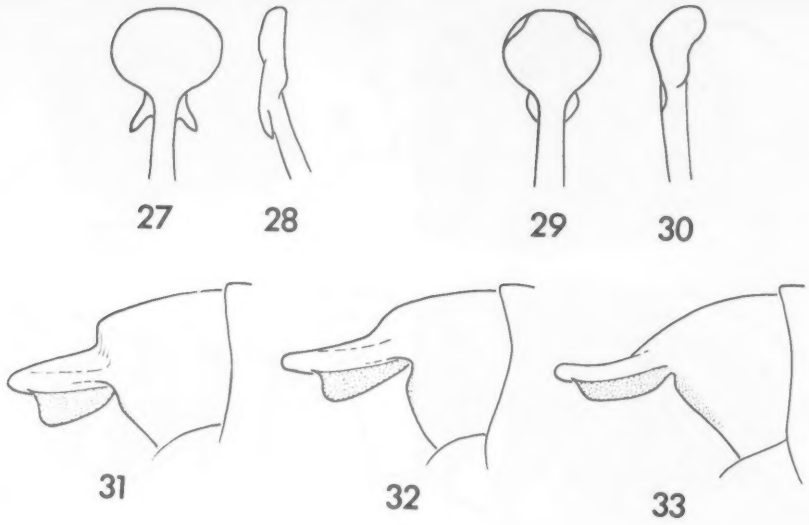
Figs. 7-12, Vespula vulgaris, gaster in dorsal view: 7-9, workers; 10-12, queens.



Figs. 13-20, Vespula maculifrons, gaster in dorsal view: 13-16, workers; 17-20 queens.



Figs. 21-26, left mandible: 21, germanica worker; 22-23, maculifrons worker; 24, germanica queen; 25, vulgaris queen; 26, maculifrons queen.



Figs. 27-30, aedeagal head in ventral and lateral views: 27-28, maculifrons; 29-30 germanica.

Figs. 31-33, male tergum VII in lateral profile: 31-32, maculifrons; 33, germanica.

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Notes on Chionaspis and Pseudaulacaspis in the United States (Homoptera: Diaspididae)

Steve Nakahara 1/

According to Takagi and Kawai (1967) Phenacaspis Cooley and Cockerell, 1899, is a junior synonym of Chionaspis Signoret, 1869, and all species formerly placed in the genus Phenacaspis in the Nearctic Region and Japan belong in Chionaspis or Pseudaulacaspis MacGillivray, 1921. Takagi and Kawai concluded that P. nyssae (Comstock), the type-species of Phenacaspis, is the leaf form of Chionaspis sylvatica Sanders which is known only from the stem. Takahashi (1952, 1953) had concluded earlier that Phenacaspis is not a valid genus and is only a leaf form of Chionaspis, but his conclusion was not accepted until recently.

In North America, leaf and stem dimorphism has been reported in five species of Chionaspis (gleditsiae Sanders, nyssae Comstock, platani Cooley, triformis Tippins and Beshear, and wistariae Cooley) (Takagi and Kawai, 1967, Tippins and Beshear, 1974). Intermediate forms have been reported in nyssae (Takagi 1967) and triformis (Tippins and Beshear, 1974). The assumed dimorphism in the five species above is based on circumstantial evidence. There is no published result of a biosystematic study to verify the existence of dimorphism in these species. Two species, heterophyllae Cooley and pinifoliae (Fitch), are known only in the "phenacaspis" form on conifer leaves. The remaining North American species are known in the Chionaspis form on stems.

In the past, Chionaspis was differentiated from Pseudaulacaspis by having an elongate, fusiform body, while the latter is turbinate. Rather than body shape, Takagi and Kawai (1967) relied on differences in the first instars, second-instar males, and adult females.

The current generic assignments of the Chionaspis and former Phenacaspis species in the United States are summarized in the list below. The species of Pseudaulacaspis that occur in the United States are also listed. Except when indicated by an asterisk (*), the assignments are from Takagi and Kawai (1967).

Chionaspis

- acericola Hollinger
- americana Johnson
- caryae Cooley
- corni Cooley
- etrusca Leonardi
- floridensis Takagi (1969)*
- furfura (Fitch)
- gleditsiae Sanders
  - =Phenacaspis spinicola Dietz & Morrison
- heterophyllae Cooley
  - =Phenacaspis heterophyllae (Cooley)
- kosztarabi Takagi
- lintneri Comstock

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Chionaspis

longiloba Cooley

nyssae Comstock

=Phenacaspis nyssae (Comstock)

=Chionaspis sylvatica Sanders

ortholobis Comstock

pinifoliae (Fitch)

=Phenacaspis pinifoliae (Fitch)

platani Cooley

=Phenacaspis platani (Cooley)

=Phenacaspis occidentalis Kosztarab* NEW SYNONYMY

=Chionaspis parkii Hollinger

salicisnigrae (Walsh)

sassceri Cockerell & Robbins

Chionaspis

triformis Tippins & Beshear (1974)*

=Chionaspis betulae Tippins & Beshear*

wistariae Cooley

=Phenacaspis fujicola Kuwana

Pseudaulacaspis

cockerelli (Cooley)

=Phenacaspis cockerelli (Cooley)

major (Cockerell)*

pentagona (Targioni-Tozzetti)

subcorticalis (Green) NEW COMBINATION

=Phenacaspis subcorticalis (Green)*

I thank D.R. Miller, Systematic Entomology Laboratory, Agricultural Research Service, USDA, Beltsville, Maryland, and H.H. Tippins, University of Georgia, Experiment, Georgia, for their reviews of the manuscript and suggestions.

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Weather of the week continued from page 170.

into Wisconsin and Upper Michigan. In the West, a storm front invaded the California coast spreading rain across the State eastward into Nevada. The Low from Minnesota drifted into western New York and on into western New England, dumping rain and snow along it's path, Thursday. The frontal system from the Low extended into southern Illinois through central Missouri to join a deepening Low in western Kansas. Since Wednesday night, Los Angeles and San Diego were drenched with 1-2 inches of rainfall. Friday, the deepening Low in western Kansas moved to Ohio with the accompanying frontal system extending southward to Lousiana and into Texas, New Mexico, and on to southern Idaho. Rain and thundershowers fell around and ahead of the Low center with snow falling well behind it, piling up across Michigan. The large lingering Low just off the west coast approached California triggering heavy rain along the coast with light amounts reported inland. The Ohio Low swept through New England on Saturday and finally moved off the New England coast. Meanwhile, the Pacific storm system and a stationary front to the north and east of the storm combined, bringing snow to the northern Rockies, showers in Arizona and New Mexico, and locally heavy rains peppered with thunderstorms across southern California. Sunday, a Low formed in Colorado with a front extending southward through eastern New Mexico as warm moist air surged northward through Texas into the central Plains. Snow or rain occurred along the front with thundershowers in New Mexico. Later in the day, heavy snow was widespread across Kansas, with lesser amounts in the dry western portion, and Nebraska, with lighter amounts reported in South Dakota.

TEMPERATURE: Monday, a High pressure center over North Dakota spread cold air over the eastern two-thirds of the Nation. Record-low morning temperatures for the date were set at Huntsville, Alabama, with 18 degrees; Raleigh, North Carolina, with 19 degrees; and Augusta, Georgia, with 21 degrees. Readings below freezing were recorded in northern Florida with the 40's reaching as far south as Miami. The cold air mass continued to hover over the Eastern United States on Tuesday, keeping temperatures well below seasonal normals along the gulf and south Atlantic coasts. Augusta, Georgia, tied their record low for the date with 20 degrees. Wednesday, unseasonably warm afternoon temperatures blessed the southern and central Rockies. Denver, Colorado, reached 66 degrees. However, it remained below freezing all day along most of the Canadian border. Cut Bank, Montana, had a high of 21 degrees. The Southeast continued quite cool with near-freezing temperatures reaching into northern Florida on Thursday. Elsewhere, temperatures reached into the 70's as far north as southwestern Kansas. Yet, just across a stationary front in northern Kansas readings lingered in the 30's. Friday, while it was unseasonably warm in the Atlantic and gulf coast regions, the Missouri and upper Mississippi Valleys were unseasonably cold. Highs ranged from 91 degrees in McAllen, Texas, to 8 degrees in Cut Bank, Montana. Unusually cold temperatures engulfed most of the Nation east of the Rockies, while warm weather prevailed in southern Florida on Saturday. Sunday, maximum temperature readings ranged from 87 degrees in McAllen, Texas, to 10 degrees in Grand Forks, North Dakota, and Cut Bank, Montana.

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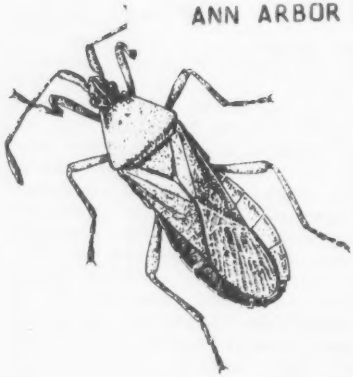
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